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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,523	12/13/2005	Masanori Takeda	23085-10480	3561

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Fenwick & West  
Silicon Valley Center  
801 California Street  
Mountain View, CA 94041

EXAMINER
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BUKOWCZYK, JEREMY

ART UNIT	PAPER NUMBER
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3661

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/538,523	<b>Applicant(s)</b> TAKEDA ET AL.	
	<b>Examiner</b> Jeremy Bukowczyk	<b>Art Unit</b> 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9 June 2005; 24 October 2006</u> .                            | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 15 and 16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter because a robot control program for making a computer mounted on a robot execute and function a certain way without physical structure is directed to program code per se which is considered functional descriptive material. The claimed programs do not define any structural and functional interrelationships between the program and other claimed elements of a computer which permit the program's functionality to be realized. In contrast, a computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between a program and the rest of a computer which permit the program's functionality to be realized, and would be statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

For example, claims 15 and 16 claim a robot control program for making a computer mounted on a robot execute and function in a certain way (computer program per se). However, the claim does not define physical structures or materials. See MPEP 2106.02 "Since a computer program is merely a set of instructions capable of

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being executed by a computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material." Since the claims clearly do not include the computer readable medium, the program is considered functional descriptive material, and thus not statutory.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim limitations voice recognition means, image recognition means, self-position estimation means, decision means, movement ease decision means, and behavior decision means uses the phrase "means for", but is modified by some structure, material, or acts recited in the claim. It is unclear whether the recited structure, material, or acts are sufficient for performing the claimed function which would preclude application of 35 U.S.C. 112, sixth paragraph.

If applicant wishes to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant is required to amend the claim so that the phrase "means for" or "step for" is clearly not modified by sufficient structure, material, or acts for performing the claimed function.

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If applicant does not wish to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant is required to amend the claim so that it will clearly not be a means (or step) plus function limitation (e.g., deleting the phrase “means for” or “step for”).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 8, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bancroft et al. (US 2002/0165638 A1).

As per claims 1, 8, 15, and 16, Bancroft et al. discloses the claimed robot control device for controlling a robot (Paragraphs [0005] – [0006]) having a microphone (Fig 6, 725; Paragraph [0071]), an imaging device (Fig. 6, 718; Paragraphs [0060], [0065]) and a self-position detection device (Fig. 6, 720; Paragraphs [0043], [0048], [0051], [0060]) comprising: a voice recognition part for recognizing the designation content of a designator based on sounds collected by the microphone (Paragraph [0136]; a self-position estimation part for estimating the current position of the robot based on an output from the self-position detection device (Paragraphs [0043], [0048], [0051], [0060]); a map data base for retaining map data registering at least the position of an obstacle (Paragraphs [0048], [0061], [0068]-[0070]); a decision part for deciding whether the movement to a specific position is required based on the recognition result

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of the voice recognition part and image recognition part (Paragraphs [0045], [0094], [0095], [0136]-[0139]); a movement ease decision part for deciding movement ease to the specific position based on the current position estimated by the self-position estimation part and the map data when the decision part decides that the movement to the specific position is required (Paragraphs [0043], [0048]-[0050], [0094], [0095]); a behavior decision part for deciding the behavior according to the movement ease decided by the movement ease decision part (Paragraphs [0043], [0048]-[0049], [0094], [0095]); and a behavior control part for executing the behavior according to the decision of the behavior decision part (Paragraphs [0043], [0048]-[0049], [0094], [0095]).

Bancroft et al. further discloses a robot control program for making a computer mounted on a robot function (Paragraphs [0189], [0202], [0203], [0205], [0206], [0208]-[0211]).

Bancroft et al. does not explicitly disclose the claimed image recognition part for recognizing the designation content of the designator based on an image imaged by the imaging device. Bancroft et al. does disclose in the reference a camera that gathers information that is utilized by a variety of systems within the robot. Bancroft et al. further discloses in the reference using inputs from the interaction portion, which the camera is a part of, that moves the robot from a first location to a second location (Paragraphs [0046], [0065], [0066], [0094], [0095]). From this teaching of Bancroft et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the referenced camera as the claimed image recognition part for recognizing the designation content of the designator based on an image imaged by the imaging device, for example, the referenced using information from the interaction

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portion to move a robot from a first location to a second location, in order to perform a variety of services for customers (Paragraph [0038]).

8. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bancroft et al. (US 2002/0165638 A1) as applied to claim 1 above, and further in view of Mäkelä et al. (May 2001).

As per claims 2 and 9, Bancroft et al. further discloses the claimed wherein the movement ease decision part reads the position of the obstacle surrounding the movement route to the specific position from the map data base, and the behavior decision part decides the behavior according to an area containing the specific position and an area where the robot exists (Paragraphs [0043], [0048]-[0050], [0069], [0070], [0094], [0095]). Bancroft et al. does not explicitly disclose the claimed sets at least two or more areas based on the distance from the obstacle. Mäkelä et al. in the same field of invention discloses the claimed sets at least two or more areas based on the distance from the obstacle (Section 5.4, *Obstacle avoidance*, page 581). From this teaching of Mäkelä et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Bancroft et al. and Mäkelä et al. in order to detect obstacles in the direction of motion (Mäkelä et al., Section 5.4, *Obstacle avoidance*, page 581).

9. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bancroft et al. (US 2002/0165638 A1) as applied to claim 1 above, and further in view of Miura et al. (May 1994).

As per claims 3 and 10, Bancroft et al. further discloses the claimed, wherein the movement ease decision part including: an obstacle recognition part for recognizing the obstacle surrounding the movement route to the specific position from the current position of the robot estimated by the self-position estimation part and the map data, and wherein the movement ease to the specific position is decided based on the area including the specific position and the area where the robot exists, respectively, applicable to an area (Paragraphs [0043], [0048]-[0050], [0069], [0070], [0094], [0095]).

Bancroft et al. does not expressly disclose the claimed warning area set part for setting an area having a possibility to interfere with an obstacle as a warning area when the robot exists, based on the position of the obstacle recognized by the obstacle recognition part; a margin area set part for setting an area with a predetermined distance from the warning area as a margin area; and a safety area set part for setting an area distant from the margin area from the obstacle as a safety area. Miura et al. in the same field of invention discloses the claimed warning area set part for setting an area having a possibility to interfere with an obstacle as a warning area when the robot exists, based on the position of the obstacle recognized by the obstacle recognition part; a margin area set part for setting an area with a predetermined distance from the warning area as a margin area; and a safety area set part for setting an area distant from the margin area from the obstacle as a safety area (Fig. 3; Section 2, page 3369). Miura et al. discloses the claimed warning area, margin area, and safety area with the referenced impassable, undecided, and passable regions. From this teaching of Miura et al., it would have been obvious to one having ordinary skill in the art at the time the



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invention was made to combine the teachings of Bancroft et al. and Miura et al. in order for a mobile robot to detect obstacles and free spaces (Miura et al., section 1, page 3368).

10. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bancroft et al. (US 2002/0165638 A1) and Miura et al. (May 1994) as applied to claim 1 above, and further in view of Tunstel (February 1995).

As per claims 4 and 11, the combination of Bancroft et al. and Miura et al. does not expressly disclose the claimed wherein the warning area set part decides the position of a circle where a distance between representative points of the surface of the obstacle is set as a diameter, and sets the warning area using the position of the circle. Tunstel in the same field of invention discloses the claimed wherein the warning area set part decides the position of a circle where a distance between representative points of the surface of the obstacle is set as a diameter, and sets the warning area using the position of the circle (Fig. 3; pages 588-589). From this teaching of Tunstel, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Tunstel with the teachings of Bancroft et al. and Miura et al. in order to deal with the numerous sources of uncertainty presented by the real world (Tunstel, Introduction, page 586).

11. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bancroft et al. (US 2002/0165638 A1) as applied to claim 1 above, and further in view of Nourbakhsh et al. (US 2002/0013641 A1).

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As per claims 5 and 12, Bancroft et al. does expressly disclose the claimed wherein the behavior decision part decides at least anyone behavior of movement, the response of movement refusal, the reconfirmation of designation, stop, deceleration and acceleration. Nourbakhsh et al. in the same field of invention discloses the claimed wherein the behavior decision part decides at least anyone behavior of movement, the response of movement refusal, the reconfirmation of designation, stop, deceleration and acceleration (Paragraphs [0008], [0010], [0038], [0042]). From this teaching of Nourbakhsh, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Bancroft et al. and Nourbakhsh et al. in order for a robot to avoid collisions in an area (Nourbakhsh et al., Paragraph [0027]).

12. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bancroft et al. (US 2002/0165638 A1) as applied to claim 1 above, and further in view of Perzanowski et al. (February 2001).

As per claims 6 and 13, Bancroft et al. does not expressly disclose the claimed wherein the voice recognition part has a designating range specification part for narrowing a designating area using a reference term, and the behavior decision part recognizes a specific position from the area of the logical product of the designating area narrowed by the designating range specification part and designating area recognized by the image recognition part. Perzanowski et al. in the same field of invention discloses the claimed wherein the voice recognition part has a designating range specification part for narrowing a designating area using a reference term, and

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the behavior decision part recognizes a specific position from the area of the logical product of the designating area narrowed by the designating range specification part and designating area recognized by the image recognition part (Fig. 4; pages 17-18). From this teaching of Perzanowski et al., it would have been obvious to combine the teachings of Bancroft et al. and Perzanowski et al. in order to incorporate both natural language understanding and gesture recognition as communication modes (Perzanowski et al., page 16).

13. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bancroft et al. (US 2002/0165638 A1) as applied to claim 1 above, and further in view of Bischoff et al. (October 1999).

As per claims 7 and 14, Bancroft et al. does not explicitly disclose the claimed further comprising a behavior schedule transmission part for making the behavior control part output a behavior schedule. Bischoff et al. in the same field of invention discloses the claimed further comprising a behavior schedule transmission part for making the behavior control part output a behavior schedule (Page 1003-1004). From this teaching of Bischoff et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Bancroft et al. and Bischoff et al. in order to verify if the robot has well understood what the user requested (Bischoff et al., page 1003).

### ***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy Bukowczyk whose telephone number is (571)

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272-5930. The examiner can normally be reached on Monday-Friday 8:00 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. B./  
Examiner, Art Unit 3661

/Thomas G. Black/  
Supervisory Patent Examiner, Art Unit 3661